Claims:

1. A method for controlling a welding process using a melting welding wire (3), wherein a welding process adjusted on the basis of several different welding parameters and controlled by a control device and/or a welding current source is carried out after the ignition of an electric arc, characterized in that at least one mechanical adjustment process (41) is carried out during the welding process to determine the position of the welding wire (13), using the welding wire (13) as a sensor.

2. A method according to claim 1, characterized in that, during the mechanical adjustment process (41), the welding parameters and, in particular, the welding current (I) are controlled in a manner that no or only little welding wire material melting is effected.

3. A method according to claim 1 or 2, characterized in that, during the mechanical adjustment process (41), contacting of the welding wire (13) with the workpiece (16) is effected by moving the welding wire (13) towards the workpiece (16).

4. A method according to claim 3, characterized in that, during the movement of the welding wire (13) towards the workpiece (16), the welding parameters are controlled in a manner that the electric arc (15) is maintained until immediately before the contacting of the welding wire (13) with the workpiece (16) while avoiding melting of the welding wire (13).

5. A method according to claim 3 or 4, characterized in that contacting of the welding wire (13) with the workpiece (16) is detected via the recognition of a short circuit.

6. A method according to claim 5, characterized in that, after the detection of said contacting, the position of the end of the welding wire is newly initialized and, in particular, reset to zero.

7. A method according to one or several of claims 3 to 6, characterized in that the welding wire (13) is moved back after con-

tacting with the workpiece (16).

8. A method according to one or several of claims 3 to 7, characterized in that, after contacting of the welding wire (13) with the workpiece (16), the welding wire 13 is moved away from the workpiece (16) to a fixedly pregiven or adjustable distance (32), preferably 2 mm to 6 mm, relative to the same.

9. A method according to claim 8, characterized in that said distance (32) is determined via the welding voltage (U), the welding current (I) or the time (t) during the movement of the welding wire (13).

10. A method according to one or several of claims 1 to 9, characterized in that the mechanical adjustment process (41) is initiated by settings selected by the user or by fixed defaults.

11. A method according to one or several of claims 1 to 10, characterized in that the mechanical adjustment process (41) is initiated by a trigger signal, for instance a threshold value for the welding voltage (U).

12. A method according to one or several of claims 1 to 10, characterized in that the mechanical adjustment process (41) is initiated at defined times, after the expiration of defined time intervals or after the expiration of a defined number of welding process pulses.

13. A method according to one or several of claims 1 to 12, characterized in that the wire advance speed (V) is increased during the mechanical adjustment process (41).

14. A method according to one or several of claims 1 to 13, characterized in that the mechanical adjustment process (41) is carried out during a base current phase (35) of the welding process, i.e., between two pulses of the welding process.

15. A method according to one or several of claims 1 to 14, characterized in that the length of the welding wire (13) through which welding current flows is measured during the mech-

anical adjustment process (41).

16. A method according to one or several of claims 1 to 15, characterized in that the electric arc (15) is newly ignited during the mechanical adjustment process (41) as the welding wire (13) is lifted off the workpiece (16).

17. A method according to one or several of claims 1 to 15, characterized in that the electric arc (15) is newly ignited during the mechanical adjustment process (41) as the desired distance (32) is reached.

18. A method according to one or several of claims 1 to 17, characterized in that a mechanical adjustment process (41) is carried out at the beginning of the welding process.

19. A method according to one or several of claims 1 to 18, characterized in that a mechanical adjustment process (41) is carried out at the end of the welding process so as to enable the adjustment of a defined distance (32) of the end of the welding wire relative to the workpiece (16) for the subsequent welding process.

20. A method according to one or several of claims 1 to 19, characterized in that the position of the welding wire (13) determined during the mechanical adjustment process (41), and optionally the determined length of the welding wire (13) through which welding current flows, are transmitted to a robot control.